

WHAT IS CLAIMED IS:

1. An adaptive cruise control apparatus for a vehicle, comprising means for sensing a speed of the vehicle, means for detecting a distance between the vehicle and a preceding vehicle, means for accelerating/decelerating the first-mentioned vehicle, and means for detecting a traveling environment, in which when the distance between the first-mentioned vehicle and the preceding vehicle is greater than a set value, a preset cruise speed is maintained whereas when the distance between the first-mentioned vehicle and the preceding vehicle is less than the set value, the distance is maintained at a predetermined value, and in which, responsive to a predetermined operation excluding operations of a cancel switch and a main switch based on a driver's intention of canceling the ACC terminating immediately after the cancellation of the ACC, the driver driving the first-mentioned vehicle, a cruise speed is selected depending upon a traveling environment to be encountered at that time to automatically resume the ACC.

2. An adaptive cruise control apparatus for a vehicle comprising means for sensing a speed of the vehicle, means for detecting a distance between the vehicle and a preceding vehicle, means for accelerating/decelerating the first-mentioned vehicle, and means for detecting a traveling environment, in which when the distance between the first-mentioned

vehicle and the preceding vehicle is greater than the set value, a preset cruise speed is maintained whereas when the distance between the first-mentioned vehicle and the preceding vehicle is less than the set value, the distance is maintained at a predetermined value and a range of vehicle speeds to be controlled is limited, and in which, responsive to the speed of the first-mentioned vehicle increasing to come into the range of vehicle speeds immediately after the ACC is canceled due to the speed of the first-mentioned vehicle being decreased by deceleration of the preceding vehicle to thereby come out of the range of vehicle speeds during control of the distance between the first-mentioned vehicle and the preceding vehicle, a cruise speed is selected depending upon a traveling environment to be encountered at that time to automatically resume the ACC.

3. An adaptive cruise control apparatus for a vehicle comprising means for sensing a speed of the vehicle, means for detecting a distance between the vehicle and a preceding vehicle, means for accelerating/decelerating the first-mentioned vehicle, and means for detecting a traveling environment, in which when the distance between the first-mentioned vehicle and the preceding vehicle is greater than the set value, a preset cruise speed is maintained whereas when the distance between the first-mentioned vehicle and the preceding vehicle is less than the set value,

the distance is maintained at a predetermined value and a range of vehicle speeds to be controlled is limited, and in which, responsive to a predetermined operation excluding operations of a cancel switch and a main switch based on a driver's intention of canceling the ACC terminating immediately after the cancellation of the ACC, the driver driving the first-mentioned vehicle, a cruise speed is selected depending upon a traveling environment to be encountered at that time to automatically resume the ACC, and responsive to the speed of the first-mentioned vehicle increasing to come into the range of vehicle speeds immediately after the ACC is canceled due to the speed of the first-mentioned vehicle being decreased by deceleration of the preceding vehicle to thereby come out of the range of vehicle speeds during control of the distance between the first-mentioned vehicle and the preceding vehicle, a cruise speed is selected depending upon a traveling environment to be encountered at that time to automatically resume the ACC.

4. An ACC system for a vehicle in which an upper limit of a set cruise speed during actuation of a wiper is lower than during non-actuation of the wiper.

5. An ACC system for a vehicle in which, responsive to a driver of the vehicle stopping the foot-brake operation after the driver decreases its speed to 10-40 km/h by performing a foot-brake operation during traveling at a speed of 60-100 km/h in

the ACC, the ACC is maintained in a deceleration of 0-0.1 G and cancelled in a deceleration of 0.3 G.

6. The ACC system according to claim 5, wherein the set cruise speed in the ACC is changed to a value other than that set before the foot brake operation was performed.

7. An ACC system for a vehicle, wherein even when the driver performs a foot brake operation during traveling at a speed of 0-20 km/h in ACC, the ACC is maintained or automatically resumed.

8. The ACC system according to claim 7, wherein the set cruise speed in the ACC is changed to a value other than that set before the foot brake operation was performed.

9. An ACC system for a vehicle, wherein, responsive to the driver stopping an accelerator operation after increasing the vehicle speed to 125 km/h by performing the accelerator operation during traveling at a speed of 60-100 km/h, the ACC is maintained or automatically resumed.

10. The ACC system according to claim 9, wherein the set cruise speed in the ACC is changed to a value other than that set before the foot brake operation was performed.

11. An ACC system for a vehicle in which ACC is maintained or automatically resumed when the driver shifts up and cancelled when the driver shifts down, during traveling at a speed of 60-100 km/h in the ACC.

12. An ACC system for a vehicle in which ACC is maintained responsive to a driver turning a steering wheel through 0-10 degrees from a neutral position and cancelled responsive to the driver turning the steering wheel through 45 degrees or more.

13. An ACC system for a vehicle in which when the driver performs a turn-signal operation in ACC, the ACC is maintained at a vehicle speed of 80-100 km/h and cancelled at a vehicle speed of 20-40 km/h.

14. An adaptive cruise control (ACC) system for a vehicle, the system having an ACC function and comprising:

means for sensing a speed of the vehicle;

means for detecting a distance between the vehicle and a preceding vehicle;

means for detecting a traveling environment, wherein, responsive to the ACC being canceled, a cruise speed is selected depending upon a traveling environment to be encountered thereafter and the ACC in which the cruise speed is an upper limit is automatically resumed.

15. The ACC system according to claim 14, wherein a range of vehicle speeds in which a desired cruise speed is settable is provided, and wherein, responsive to the speed of the first-mentioned vehicle obtained by said vehicle speed detecting means coming into the range of vehicle speeds after coming out of the range of vehicle speeds to thereby cancel the ACC, a cruise

speed is selected based on a traveling environment to be encountered at that time; and the ACC automatically in which the cruise speed is an upper limit is resumed.

16. The ACC system according to claim 15, wherein the range of vehicle speeds overlaps with a second range of vehicle speeds defined between a first value to which the speed of the first-mentioned vehicle obtained by said vehicle speed detecting means comes out of the first-mentioned range of vehicle speeds and a second value to which the speed of said first-mentioned vehicle obtained by said vehicle speed detecting means comes into the first-mentioned range of vehicle speeds.

17. The ACC system according to claim 14, wherein the traveling environment detecting means comprises at least one of:

- a plurality of switches one of which is to be selected by the driver;

- means based on a vehicle speed;

- means based on map information for car navigation (including GPS information);

- means based on information such as road traffic information or automatic toll reception information received by the vehicle with the aid of radio-wave or optical means from an infrastructure;

- means based on a position of a gear;

- a wiper actuated switch; and

- means based on a processed image signal from

a camera.

18. The ACC system according to claim 14, wherein the ACC is cancelled by at least one of a brake operation, an accelerator operation, a shift-up/down operation, a steering operation, and a turn-signal operation.

19. The ACC system according to claim 14, wherein the ACC comprises inter-vehicle distance control and/or constant-speed travel control.

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